CLAIMS

We Claim:

1) An apparatus for generating an angular sweep of a directed propagation of electromagnetic radiation, comprising:

a first reflector adapted to move over a first angular range of movement; and

at least one fixed reflector to reflect the directed propagation of electromagnetic radiation incident upon and reflected by the first reflector onto the fixed reflector and back to the first reflector;

wherein the first angular range of movement of the first reflector creates an increasing sweep of the directed propagation of electromagnetic radiation with each reflection from the first reflector.

2) The apparatus of claim 1, wherein the first and the at least one fixed reflector are normal to a common plane.

3) The apparatus of claim 1, wherein the fixed reflectors are arranged on a first and a second side of the directed propagation of electromagnetic radiation incident on the first reflector.

4) The apparatus of claim 1, wherein the directed propagation of electromagnetic radiation is a laser beam.

5) The apparatus of claim 1, wherein the first reflector and the at least one fixed reflector are mirrors.

6) The apparatus of claim 5, wherein the mirrors are planar.

7) The apparatus of claim 1, wherein a means for oscillation drives the movement of the first reflector.

8) The apparatus of claim 1, wherein the movement of the first reflector is adapted to have a variable amplitude.

9) The apparatus of claim 1 wherein the movement of the first reflector is adapted to have a variable frequency.

10) The apparatus of claim 1, wherein the movement of the first reflector is adapted to have a variable frequency and a variable amplitude.

11) The apparatus of claim 1, wherein the distance between the first reflector and at least one of fixed reflectors is adjustable.

12) An apparatus for generating an angular sweep of a directed propagation of electromagnetic radiation, comprising:

a first reflector adapted to move over a first angular range of movement; and

at least one fixed reflector disposed to create a reflective path wherein the directed propagation of electromagnetic radiation incident upon the first reflector is reflected to the at least one fixed reflector and back to the first reflector with a first sweep;

the first sweep incident on the first reflector is increased by reflection again off of the first reflector, creating a final sweep with a magnitude greater than the first angular range of movement.

13) The apparatus of claim 12, wherein a plurality of the fixed reflectors are disposed to direct the reflective path onto the first reflector more than once.

14) A method for sweeping a directed propagation of electromagnetic radiation, comprising:

directing the directed propagation of electromagnetic radiation onto a reflective path passing onto and off of a first reflector, then onto and off of at least one fixed reflector and back onto and off of the first reflector;

moving the first reflector.

15) The method of claim 14, further including the step of varying a amplitude of moving the first reflector.

16) The method of claim 14, further including the step of varying a frequency of moving the first reflector.

17) The method of claim 14, wherein the directed propagation of electromagnetic radiation is initially directed through the reflective path while the first reflector is static.

18) The method of claim 14, wherein the directed propagation of electromagnetic radiation is used to illuminate a machine readable symbology.

19) An apparatus for generating an angular sweep of a directed propagation of electromagnetic radiation, comprising:

a first reflector adapted to oscillate; and

at least one secondary reflector;

the first and secondary reflectors disposed to create a reflective path onto and off of the first reflector at least twice.

20) The apparatus of claim 19 wherein a distance between the first and at least one of the secondary reflectors is adjustable.

21) The apparatus of claim 19 wherein at least one of the secondary reflectors is adapted to oscillate.